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The Beautiful in the Surroundings of Life.

MR. HAMERTON has well defined the word "landscape" as meaning "the visible material world, or all that can be seen on the surface of the earth by a man who is himself upon that surface." Wild landscape—the scenery of the natural world—possesses infinite interest and charm for those of us who live caged in towns and cramped in houses, and we greatly enjoy both traveling in search of it and reading the praise of it. No age of the world has ever brought forth so many delightful books about the woods, the mountains and the sea-shore. The beauty of natural scenery stirs us as does the finest music. As Mr. Symonds has noted, "there is a profound sympathy between music and fine scenery; they both affect us in the same way, waking strong but undefined emotions which express themselves in 'idle tears' or evoke thoughts which lie, as Wordsworth said, 'too deep for tears' beyond the reach of any words." It seems as if our extreme delight in the beauty of wild landscape, tending, as it seemingly does, "to destroy habits of clear thinking and to sentimentalize the mind," had caused us to overlook for the time the supreme importance of that part of landscape which is necessarily not wild—the landscape of our daily lives—the humanized scenery of the earth. This prevalent carelessness concerning the landscapes of every-day life is something remarkable. Here are our rich men paying enormous sums for painted landscapes to be hung in their houses while they permit the real landscape about them to become ugly in the extreme. Here are poorer people spending liberally for journeys in search of the picturesque while what might be the picturesqueness of their own neighborhood is unperceived or destroyed.

But there are signs that a better day is coming. Some parts of our great America are even now beginning to stir with eager desire for beauty. It is true, the desire is unformed, and our work is too often based upon mistaken conceptions of that beauty which is our hope, and yet we must be thankful when the desire appears among us, for it is something which distinctly ennobles the life of every man and nation in whose heart it is born. Possessed by it, we are compelled to strive and strive again to find "the secret of the beautiful," the foundation upon which beauty is built, the nature of that growth of which beauty is the flower. We shall make our mistakes like other men. We shall attempt to attain our heart's desire by forbidden and impossible ways. We shall probably fell noble forest-trees to make room for brilliant exotics. Perhaps we shall curve our roads because we think we like curves, or build our houses according to some pattern we admired in a foreign land. But, even so, there is hope for us. We shall learn in the end. And, meanwhile, so rash and willful and so generally unsuccessful are we in all this field of work that it may be worth while to look back for a moment over the long story of the evolution of landscape in the hope that we may find therein that key to the secret of the really beautiful which we seek.

Not to name others, Mr. Ruskin, in his early essay on the Poetry of Architecture, has been before us here. He finds man in primitive ages living precariously upon wild nature, and causing little or no change in the appearance of the wilderness around him. When, at last, he is forced to increase his food-supply, he takes some wild thing like maize and plants it in the glades of the forest, and stores the crop in granaries set up on stakes. When he desires to shelter himself, he contrives frail tents like the Bedouins or the Red Indians, or he walls the mouths of cañon caves, or he builds earthern pueblos hardly to be distinguished from the arid ground on which they stand. As he comes to cultivate broad stretches of the earth, he works marked changes in scenery. He fells the woods and marks off fields and draws lines of roads across the country. He plants avenues and orchards, he makes gardens and vineyards, he builds farmsteads of as many types as there are differing climates and differing social circumstances, he builds villages and cities, he rears palaces and temples, doing all to meet his needs and to express his life; and so long as he is sincere and straightforward in his work, mother Nature stands ready to adopt it as her own, and to make of it landscape rich in meaning and pathos such as no primitive wilderness can show.

Look for a moment upon a typical valley of the interior of our own New England. We are standing upon the eastern wall of upland. The village, with a mill or two and a church or two, lies below us at the mouth of a gap in the northern hills. Southward the valley broadens to contain a fresh green intervale. Opposite us the western wall of the valley is an irregular steep slope of rising woods, with numerous upland farms scattered along the more level heights above. The central intervale, the flanking woods, the village gathered at the valley's head—the whole scene before us possesses unity and beauty to a degree which interests us at once. And how was this delightful general effect produced? Simply by intelligent obedience to the requirements of human life in this valley. The village grew what it is for the sake of nearness to the great water-power which rushes from the gap in the hills. The intervale was cleared and smoothed for raising perfect hay. The steep side hills have been maintained in woods because they are too steep for agriculture, and because, if they were cleared of trees, their sands and gravels would wash down upon the fertile land of the intervale. Similarly upon the upland farms, the greenery along even the tiniest brooks has been preserved in order to obviate that wasteful washing away of soil which results from carrying plowing to the edges of the water-courses. Throughout the landscape before us it is most interesting to note how beauty has resulted from the exercise of common sense and intelligence. The every-day forces of convenience, use and true economy have here conspired with Nature to produce beauty, and this beauty is of a very different and much more satisfying kind than that which tries to found itself on mere caprice or fashion.

If, now, we search the world over, do we not find the same truth everywhere? Let us call to mind some of the loveliest of earthly scenes. The red farmstead among the Firs of Sweden, the Ilex-trees and the white villas of the steep bank of Como, the English deer-park and its stately mansion, the towered village of the Italian hills, the broad green and the great Elms of our own Hadley or Deerfield. The beauty of these memorable humanized landscapes is nothing extraneous; it is not something added to the landscape after the main lines have been laid down; it springs directly from the fact that these fields, trees, ways and buildings have been arranged first with reference to the needs, uses and enjoyments of real life in their respective lands and climates, and it is their perfect conformity to these principles which constitutes the essence of the beauty we admire. Not by display of knowledge of the styles of architecture and gardening; not by gathering in one place all the trees of the earth; not by imitating the beautiful features of the scenery of foreign lands and climates; not by copying wild nature in places which are not wild; not even by attempting to obey the laws of landscape-painting, will beauty ever be won to dwell among us in the surroundings of modern life. "All that would be fair must be fit." There is no other way to win the beauty we desire.

This truth being accepted, what shall we of this too self-conscious age say to our gardener and our builder when we set out to make "a place of our own"? To the first it must be: Lay out no road or path which is not the most convenient possible in the circumstances. Lay out nothing for mere flourish, but all for use or rational enjoyment. Fell and plant and choose the kinds of plants for good reasons only. In all you do, have constant reference to the general scheme of the whole place.

To the builder we say: Plan for convenience first and always. Take advantage of every peculiarity of the purpose, the site and the exposure of the building. Let the exterior of the building faithfully represent the interior, and shape it not as a thing apart, but as the central object in a larger design. In placing doors which involve paths; in arranging drying-yards, kitchen-courts, piazzas and terraces; in all you do, have constant reference to the general scheme of the whole place.

And who shall conceive and insist upon this general landscape scheme in the perfecting of which the artist gardener and the artist builder are to play their respective parts? In these days it is seldom that the need of such a broadly inclusive scheme is realized even by the artists who have part in the work, much less by the managing owner; and yet the time is coming when the landscape-architect, whose province is just this arranging of the building and its surroundings to form one landscape, will be welcomed alike by owner, builder and gardener as the man who will cause the work of each to count for beauty much more effectively than it otherwise can. When this day comes, and either the owner, the gardener, the builder or the professional specialist is looked to as the deviser of a general landscape design based on purpose and fitness, and not upon caprice; then, again, there will be hope of finding the really beautiful in the surroundings of daily life.

Our attention is called by the *Boston Commonwealth* to the fact that Samuel Sewall celebrated Columbus Day in 1692 by planting five Chestnuts. If these Chestnut seedlings had been carefully nurtured as memorials of the second centennial of the discovery of America, the great trees as they were about entering upon the third century of their existence would now be objects of the deepest veneration. We are glad to learn that in many places, as in the new park at Jamaica, Long Island, memorial trees have been planted this year in honor of the fourth centennial of the great discovery. Four hundred years hence, an Oak carefully planted now and duly nourished and protected from year to year, would have a value beyond that of merely directing the attention of future Americans to the daring navigator who found the western shore of the Atlantic. We are beginning to be old enough to have a past, although our most venerable date is modern compared with those of European history. We scarcely realize how the doings of the day will look to the generations in the thirtieth century, who will turn to our records as we revert to those of the Ancient Britons and study the marches of Cæsar. It is a novel thing for us to pose for posterity, but the time has come when it will not be considered altogether frivolous on our part to have some care for statuesque effect a thousand years hence. If we now take heed to establish customs honorable and worthy of veneration we shall then have groves which will compel the same reverence as that with which we regard the park of the Druids and the Olives of Baiæ.

Any custom which encourages the intelligent planting and care of trees is worth establishing and cherishing. If forestry is ever to assume its proper place in public instruction, beginning must be made with the children, and we must impress upon them from earliest youth the value of trees in the economy of nature. They must be taught the importance of preserving our woods and be made to feel that it is the solemn duty of the generations to come to cultivate and guard these bulwarks of our national prosperity. No course of physics should be considered complete in our common schools or our higher institutions of learning which does not include the influence of trees upon agriculture and civilization. But the intellectual appreciation of the economical value of trees is worth a great deal more when this knowledge is vitalized by an admiration of their beauty and a genuine affection for them. Our forests will only be safe after we have become a nation of tree-lovers, and the foundation of this regard can be laid in no way so well as by enlisting the interest of children in individual trees. Memorial trees, grouped on school-grounds or supporting a town-hall, if they have been planted with some ceremony by the children of the place and entrusted to their care under the supervision of their elders, would become in time objects of deep personal regard. This affection for the tree by its planters and protectors will grow stronger as all grow together. No one who has developed a love like this for any one tree can witness the useless destruction of another without a feeling of pain and indignation; and we can never look for an assured protection of our woodlands until the mass of the people of the country are not only instructed as to the important function which trees perform in the economy of a civilized nation, but have been brought up from childhood with a growing appreciation of their beauty and a constantly deepening affection for them as if they were personal friends.

The Columbian anniversary, then, will be a genuine advantage to the nation, if it helps to establish the custom of planting and caring for memorial trees.

Mount Desert—A Foreigner's Impression.

THERE is much to sadden the heart of the lover of garden and forest on Mount Desert island. The sight of the woods is lamentable. One day we drove past mile after mile of half-grown, tangled, choked and airless woods, filled with falling trees and rotting rubbish, and rendered still more uncanny by the numbers of dead trees standing like dreary ghosts, that could not even move about, fettered in the stony soil. And when, after a few miles of this, I could not help saying that "I had never seen worse-kept woods," I fear I exposed myself to ridicule.

It was carefully explained that America had no need of forestry, and one would judge so indeed by the lavishness with which splendid logs were piled up in the generous fire-places. Yet wood is worth something in Boston, and the splendid logs themselves give little pleasure to one who sees them burning after he has observed that trees of the calibre they represent are none too many for beauty, that is the landscape beauty which ought to be such an important element in a summer playground.

Good forestry takes landscape beauty into account, and although it might seem ludicrous to propose, in a poorly populated district like Mount Desert, to thin out the rubbish which is such an offence to the eye of one accustomed to Swedish woods, yet at least the finest specimens might be left and a few more of the indifferent trees taken instead.

But the great end and aim of practical forestry is utility, and in this respect there is much to astonish the foreigner in the state of things on the large, wooded island of Mount Desert. We do not sweep our forests with a broom, as some Americans believe, but we treat them as we should any other valuable crop, trying to favor its growth and not leaving it to fight unaided against its enemies. It will not be long before America, at the pace she is going, will have to give up the fiction of youth, which is now offered as the excuse for all wastefulness, and begin to profit by the experience of her elders, who are bitterly ruing the day when they squandered their patrimony of seemingly exhaustless woods. The forest on Mount Desert seemed to me to be just in that stage of secondary growth when interference becomes imperative, both to preserve the fine trees and give them the opportunities they deserve and to make a good crop in the thickest places out of a poor one. Natural selection would ultimately do the work, but who has time nowadays to wait for the slow process of natural selection?

In the landscape-gardening here, good tendencies and successful results are seen side by side with what must be called perversity of taste. (I am not here speaking of Bar Harbor, which I did not happen to see.) Why spend untold gold in making and keeping a lawn on this rocky soil when the unobtrusive shingle houses, with their surroundings of bare rock and native Spruce, have a fascination which no one can resist?

Of course, there is something to be said for the lawns, too, as symbols of contrast, as a little glimpse of city luxury for those who care for that in the midst of this unkempt nature. Only to make the contrast telling the lawns ought to be of the most velvety and sparkling turf—ought to be framed in an immediate setting of wild woods, or be set apart by enclosures from the vulgarity of the semi-villages. Coarse villages are here even more than elsewhere a very poor substitute for the natural "wild garden" they have replaced, and the sight of expensive lawns, on which the hose is constantly spurting, surrounded by cheap houses and shops with plate-glass windows, only suggests a needless and tasteless outlay of money; and this is vulgarity.

However, I did see a few very successful combinations of lawn and wild scenery, and one in particular. The house is situated on a point at some distance from the main road, and communicating with it by a long straight drive, with the low brushwood on either side left quite wild except for a narrow strip of turf along the drive. Spreading lawns, studded with the beautiful natural evergreens of the region, surround the house on every side. On the inland side these trees are made to serve as a dark background for a set of bright flower-beds fronting the main entrance; on the piazza and sea-view side, the lawn is kept clear, save for groups of graceful Larches, Spruces and Pines that contrast effectively with the smooth gleaming turf and merge insensibly into the wild strips of wood left in places here and there.

But the most charming creation had no lawn at all. It made all the more impression on me for my coming on it one morning unawares after a week of perplexed wonder at the state of the woods and the lack of taste and the absence of any unity whatsoever in the arrangement, or non-arrangement, of the summer settlements. I had been seeing not only unkempt forests and human habitations grouped together in the ugliest possible way; I had also seen some splendidly wooded rocky promontories, plunging their dark masses into the clearest of tidal seas, and left unspoiled by the happy mortals who had there set up their summer abode; I had seen superb, far-spreading views, and some very beautiful, interesting and altogether satisfactory mountain-sides, which might have been in Sweden except that the place of the Red Oak, our pride and joy, was taken by White Pines and Pitch Pines, and that Moose-wood, White Maple and Yellow Birch mingled freely with the White Birches on the stony slopes. Yet all these beauties of nature only made me feel more keenly the mistakes in taste and want of care displayed, and it was in this frame of mind that I came upon the little "creation" aforementioned. It is a mere little log-hut or lodge standing by itself in the woods on the slope of the mountain of Asticon. It is dark brown in color, has a picturesque gable with some carving, a high foundation, and a raised, very effective, rough piazza along two sides of the house. It was closed, and with a very formidable padlock, too, so I could prowl about freely. The site was exquisitely chosen, giving a view from the piazza that seemed the very essence of Asticon; the peaceful harbor cradled by wooded hills with the broad expanse of sea and islands beyond. The situation was full of the poetry of *Waldeseinsamkeit*, for which the German has so many condensed expressions and the English so few, and the whole place lying there silent, basked in the sun, among the mossy ledges and tall Arbor-vitæ, somehow like the wood-hut of The Three Bears. Very little had seemingly been done to it, but a great deal of thought had been put into it, and one little touch of visible art went very far toward deepening the charm. On the slope, in front of the piazza-steps, there was a thick grove of tall Arbor-vitæs. Through these a passage, or tunnel, had been cut, accentuated by a low stone wall, leading part of the way up toward the piazza, the whole giving a faint suggestion of foreign lands and conscious art, that only served to heighten the imaginative charm of the place.

Truly, the art of landscape-gardening does not always consist in spending a lot of money in transforming nature.

New York. *Cecilia Waern.*

Botanical Notes from Central Texas.

THESE notes are written from the city of Lampasas, which lies in the north-west angle made by the intersection of the thirty-first parallel with ninety-eighth meridian. The city is situated in the valley of Sulphur Creek, and is the capital of a county of the same name. The creek takes its name from the numerous sulphur springs which issue from its bank or from near them, and keep up its perennial supply of water. Within the city limits there are two springs whose waters are so strongly impregnated with sulphur as to leave incrustations of that mineral upon the rocks and plants over which they flow. Each of the springs is the source of a little brook.

While Lampasas may be considered to be the base of these observations, still many of them were made in Burnet County and around the city of Llano. We are now in old Texas. The western part of Burnet County and portions of Llano County are very old—so old that they are considered to be synchronous with the Iron Mountains of Missouri, the Black Hills of Dacotah and the Laurentian Hills of Canada, and with them stood out as solitary far-separated peaks above the primeval sea long before the Rocky Mountains were upheaved. The ninety-eighth meridian, more nearly than any other, is the dividing line between the vegetation of eastern Texas and the Mexican flora of its western border. It is largely the common ground where adventurous species of both sections meet.

The characteristic tree of this region, and the most valuable one, is the well-known Pecan (Hicoria Pecan). When this species lays itself out for a supreme effort it attains a much larger size than its congeners, becoming a hundred feet tall and four feet in diameter. An important and growing trade in pecan-nuts already adds millions of dollars to the wealth of Texas farmers. A large tree under favorable conditions may produce ten bushels of nuts in a year. Live Oak is, next to Post Oak, the commonest Oak in central Texas. It also attains a larger size than any other Oak attains here. A peculiarity of this species is the formation of dense groves, "mottes," sometimes covering only a few rods, sometimes several acres of the other naked prairie. I asked a native Texan for the origin of these groves that form so distinctive a feature of the landscape of central Texas. He replied, "They come from the roots of some old tree that is now dead and rotted away." They may have come from the thousands of acorns which some old now-gone tree had planted. Quercus Durandii, Q. nigra, Q. macrocarpa and Q. coccinea are also here. Hackberry (Celtis) in several forms is common. Whether the numerous forms under which it appears constitute a single species or more than one is a question for systematists. If there be more than one, there are probably four. Botanists have nothing to do with making species. They have only to learn, if possible, how many species Nature has made—whether one or a dozen of a genus they should not care. The question then comes up, What is a species? There the trouble begins. It may be true that sometimes with too much freedom we dignify slight variations of form in plants as varieties, and couple too many specific names with the hybrid symbol without having made one experiment to learn if the united species would hybridize, or, if they will hybridize, that the hybrid is like the form that we have found. It may also be true that in our desire to do original work we have not given sufficient prominence to the range of individual variation in plants—a variation that may fill the entire gap between species without ever crossing the line that separates them.

White Elm (Ulmus Americana), U. crassifolia and U. alata are abundant. What I suspect to be U. crassifolia, as I have no description by me, is at this writing in full-ripe fruit. It blossoms late in summer, and, like other Elms, takes a few weeks only to ripen its fruit. There is also an Elm here in fruit with strongly winged branchlets. Near Fort Smith, Arkansas, U. alata was loaded with nearly ripe fruit as early as the 1st of April.

The Button-bush (Cephalanthus) is common along streams, and the species is sometimes arborescent. I have seen individuals nine inches in diameter. Wild Black Cherry (Prunus serotina) grows near Burnet. Wild Plum (P. Americana) is abundant. The handsome little shrub Dalea frutescens is common on the summit of Post Mountain, and there the western Honeysuckle (Lonicera albiflora) begins to appear.

Vernonia Lindheimeri is everywhere on the limestone hills of central Texas. On richer soils lower down the hillsides, a handsome Erythræa during the month of August covers the ground with its bright pink flowers.

Mesquit (Prosopis juliflora) is nearly everywhere, and Texas would hardly be Texas without it. With wood serving for fuel, and seeds for animals, and for human beings when hunger pinches, it is invaluable for beast and man. Usually a small tree, it often becomes sixty or seventy feet tall, and two feet or more in diameter.

In rocky places, conspicuous by its long lithe branches covered with small, white and sweetly scented flowers, grows Lippia ligustrina. It is often seen in cultivation, to which its beauty and odor entitle it. There is no Texas shrub whose flowering sprays are better adapted for delicate, odorous bouquets. Eysenhardtia amorphoides, a small shrub of the Pea family, is often found in company with Lippia. Although burdened with such a name, it bears handsome white flowers that are pleasantly odorous. Soapberry (Sapindus acuminatus) is often seen in this region, where it becomes a handsome tree. It is more commonly known in the south as "Wild China," from the resemblance of its unripe fruit to that of the China tree, Melia Azedarach. Sapindus seems to have overlooked the fact that high botanical authority asserts that the common petiole of its compound leaf is never winged; and it persists in making its common petiole strongly margined or winged between the leaflets, at least in young trees, as specimens collected in Kansas and in Texas show. The Mexican Buckeye (Ungnadia speciosa) is very abundant on rocky banks and bluffs throughout our range. It grows eastward as far as Harris County, and extends far westward. Commonly a small shrub, it sometimes becomes a tree of respectable size. The largest individuals that I have seen were on the banks of La Vaca River, near Halletsville. They were over a foot in diameter and thirty feet tall. The discovery of this species, as botanists know, marks an epoch in systematic botany. The fact of its being really a pinnately leaved Buckeye gave us Sapindaceæ in its present form. The rose-colored flowers are large and handsome. Each cell of its triangular fruit contains a shining dark brown, small roundish seed, closely resembling a small Buckeye-seed.

The forms of Rhus copallina, known as variety lanceolata and variety leucantha, are very common west of the ninety-seventh meridian. Toxicodendron is nearly everywhere. This species, as now defined, is in a sadder condition than even Celtis. It is often seen climbing seventy-five to one hundred feet high, throwing out strong horizontal branches sometimes ten feet long. It is sometimes a weak, straggling, nearly erect shrub; a low form, not more than a foot or two tall, covers hundreds of acres of the prairies of western Kansas. The western form of R. Canadensis is also common in rocky places. R. virens, with handsome evergreen leaves, is found along Colorado River and on the mountains near Llano. Its rather large white flowers appear in September, and are succeeded by bright red fruit.

At Marble Falls I met for the first time in Texas Solanum heterodoxum. It closely simulates S. rostratrum, having the same watermelon-like leaves; but they are more viscid and the plant is taller and slimmer, and has bright blue flowers. S. elæagnifolium, S. Torreyi, S. nigrum and S. triquetrum are common. The last-named species is slender-stemmed and clambers over rocks and bushes. Its specific name alludes to its somewhat triangular stems.

Granite Mountain gave me my first view of the handsome fern, Pellæa ternata. P. flexuosa is very abundant along the rocky bluffs of Colorado River, and both species, with other ferns, grow on Sand Stone Mountain, near Llano. Around the mountain and everywhere in sandy places the eastern Zornia tetraphylla grows like a weed. It is here slighter and more erect than it is in the east. Philibertia undulata is rarely found near Llano, and also Desmodium Wrightii, remarkable for being unifoliate.

Galactia heterophylla grows abundantly in the streets of Llano. This species was first discovered by Lindheimer somewhere along Llano River. It is, so far as known, a strictly Texan species, and has been in only two or three other stations in that state. It is noted for sometimes making itself an extra pair of leaflets, thus becoming partially five-foliate. The peculiar Talinum lineare, handsome Oxalis vespertilionis, one or two species of Menodora, Cassia Lindheimeri, C. Pumilio and the black-eyed form of Œnothera serratula begin to appear near the Colorado River in Burnet County.

While at Llano I set out on a search for Mollugo cerviana. This rare and little-known plant was discovered by Dr. Palmer about twelve years ago, for the first time in Texas, near Bluffton, on Colorado River. That station is about thirty miles from Llano. My labor was rewarded by finding a single specimen. Two or three days later I found another individual, and almost despaired of finding more. But I found it subsequently in abundance in another locality. It delights in fine granitic sands, where little else will grow. This species has nearly the flowers of M. occidentalis, from which its narrowly linear glaucous leaves will readily distinguish it. These stations in Llano County are the only known Texas stations for this plant. It has, however, been collected in New Mexico and in Arizona. Collectors will doubtless find the species abundant, as I did, along the left bank of Pecan Creek, a little way above the highway bridge, and a mile or so west of North Llano. Little Dichondra repens is abundant in Texas wherever I have been. It is called a coast plant. It is found along the coast, but more abundantly away from it. I first met it at Arkadelphia, Arkansas. Cissus stans, which, however, seldom stands, and often climbs by tendrils thirty to forty feet high, with C. incisa, and C. Ampelopsis are found within the range of these observations. The southern Dewberry (Rubus trivialis) is also here and westward to the Rio Grande. Its stems are sometimes twenty feet long.

Lampasas, Texas. *E. N. Plank.*

Mid-October in West Virginia.

THE Sour Gum (Nyssa aquatica) is, perhaps, the most beautiful of trees in mid-October here, yet its glory is fleeting. The earliest of trees to don its garment of brightness, it is the first to lose it, and now stands naked and forlorn, while its less brilliant neighbors, the Oaks, have scarcely lost a leaf. Twin Gum-trees, standing six feet apart on rising ground in the midst of the grove at Rose Brake, made a splendid picture for a few bright sunny days of the second week in October, all the more noticeable from the scarcity of brilliant coloring in the warm dry weather that still prevails. Now the trees are stripped and the ground beneath them glows with scarlet, fast withering to brown. These twin trees are unusually high-colored in October, the leaves turning a uniform bright red. Other Gum-trees in this grove never take on such deep tints, but are, perhaps, even more beautiful, because more varied, with red, orange, pink and green, as the sunlight blends their colors into indescribably lovely effects. Few trees possess so much individuality as these isolated specimens of Nyssa aquatica, with their varnished leaves, irregular forms and gnarled and crooked branches. The effect of their fantastic outlines is far more pleasing than the most formal symmetry. To no other tree does the word picturesque more appropriately apply. The individual leaves of the Gum-trees hereabout are almost always marred by the singular little larvæ that prey upon them. Sitting under the trees in late September, I used to wonder at the curious oblong "seeds," as I supposed them to be, that fell whenever a light breeze shook their foliage. Once, to my horror, I found one of the "seeds" endowed with voluntary motion and slowly and awkwardly endeavoring, by a series of galvanic jerks and somersaults, to explore the shawl upon which I sat. A little dark head emerged, and tiny feelers laid hold upon the woolly-surface shawl, and then I cut short the enterprise by taking up the explorer, bed and all, to examine. There it was, snugly tucked between two leaf-blankets, a worm or larva about one-third as long as my little finger-nail. It had preyed upon the leaf of the Gum-tree, and, not content with board, exacted bed and shelter as well from its unwilling landlord. Afterward I found, by holding the leaves up to the light, many an intruder between the upper and lower surfaces eating away the tissues of the leaf and never risking its own precious skin in return. All its active larva-life seems to be spent in this manner from the time it hatches from the tiny egg which the mother moth lays

between the layers of the leaf. Then, when its growth is attained, it carefully eats away an oval portion of the leaf, which encloses its small self and takes no further care. Puff comes a waft of wind and down it tumbles, to await the next chapter in the story. I have counted as many as five of these oval perforations in one leaf.

Our young conifers continue to dry and brown before our eyes—a discouraging sight. Hemlocks are hard to establish here in the most favorable season; this year only one out of three planted in the spring is alive. Silver Firs suffer much, and some of them are too far gone to be saved when the skies relent. English Yews have died outright of pining for the moist soil and frequent rains of their native land. It is a clear case of nostalgia. But the Deodar or Indian Cedars and our one tiny Cedar of Lebanon are as fresh as when planted in the spring, and a Japanese Cryptomeria has taken firm hold

Fig. 90.—Dendrobium chrysotoxum.—See page 534.

of the rich soil of an old wood-pile, where it was planted, and is in flourishing health.

The Japanese Retinisporas are nearly all doing well, while Kalmias and Evergreen Andromedas have given up the struggle. Euonymuses and the Southern Magnolia stand the season well, and so do Hollies and the beautiful Mahonias and the choice Osmanthus illicifolias, one of the finest of broad-leaved evergreens.

In the deciduous shrubberies perhaps the most striking plant at this season of the year is Callicarpa purpurea. Its foliage is still green and its many clusters of small berries, which are a very unusual shade of pinkish purple, with metallic lustre, are exceedingly odd and pretty. These berries do not lose their brilliancy until late in the winter season, and I do not think they are often eaten by birds.

Yuccas are proving fine plants for a dry hill-side. They are unaffected by drought and are fresh and green at all times. We prefer to plant them in groups away from other shrubs. A few that are allowed to cluster around a large Arundo donax form a very attractive group.

Rose Brake, W. Va. *Danske Dandridge.*

Plant Notes.

Dendrobium chrysotoxum.

DENDROBIUMS with golden-yellow flowers are always admired, especially in this group, when the flowers are borne in clusters. The subject of the illustration (p. 533) is in the collection of E. V. R. Thayer, Esq , of Lancaster, Massachusetts, and is one of the largest and best examples of the plant in this country. It carried twenty-four handsome spikes, crowded with blossoms, which remained in full beauty for four weeks. Its flowers appear during the early spring months, and, consequently, make a most useful plant for exhibiting. The glowing yellow color of its blossoms makes a delightful effect when arranged with graceful Palms and other plants with ornamental foliage.

Baskets or pots will suit the cultural requirements of this plant, although baskets are preferable, since an abundance of air is essential during its period of growth, enabling the compost to dry out more quickly, and, therefore, be less liable to become stagnant. Good fibrous peat, with very little sphagnum and free drainage, is the best compost. During active growth it enjoys a temperature of sixty to sixty-five degrees. A few degrees higher with sun heat will prove very beneficial.

New York. *A. Dimmock.*

New or Little-known Plants.

Halesia tetraptera Meehani.

THIS seedling form of a well-known plant is figured on page 535 of the present issue, as it is not only interesting as showing a possible range of seminal variation, but of considerable value as a garden-plant. Its history is best told by Mr. Meehan himself, who has communicated to us the following information:

"Formerly we had only two trees of Halesia tetraptera from which we collected seeds for our nursery work, one in Germantown, on the Upsala estate, and one in Laurel Hill Cemetery. Our own history credits the seed from which the variety was raised to the Germantown plant, though I am willing to admit that it may have been collected in Laurel Hill Cemetery. In any case, however, there is not the slightest possibility of any hybridizing with Halesia diptera, the only specimen of which in this region was the small plant in Bartram's gardens, ten miles away.

"In passing the seed-beds one day I thought I noticed an Apple-tree growing with the Halesias. This attracted my attention to this curious plant, which was taken up and preserved. The flowers are no less interesting than the foliage and habit, as there is no trace of the narrow tube-like base peculiar to the corollas of Halesia tetraptera; the corolla is completely saucer-shaped, and Professor Gray, after examining a flowering branch, remarked that if it had been found wild one might reasonably suspect a new genus.

"Though the sexual organs seem perfect and the anthers abundantly polleniferous, the plant is barren. Once I found two seed-vessels; they were very small, subrotund, and strictly four-winged, as in those of Halesia tetraptera. The habit of the plant is wholly unlike its parent; the head is round and bushy, looked at from a distance precisely like an Apple-tree. At the present time the original plant is about twelve feet high and the head twelve feet across, the trunk being six feet high and fifteen inches around. My men, feeling some distinctive name for nursery purposes necessary, have distributed this plant as Halesia Meehani. I dislike Latin names for garden varieties, although this form might have sprung up in the forest as well as in my garden, and it seems to me that if the practice is ever justifiable it is in the present case."

Halesia tetraptera Meehani differs from the ordinary form in habit; the flowers are smaller, with a short calyx-tube and a cup-shaped corolla without the narrow base of that of the species, and are borne on pedicels which rarely exceed half an inch in length, while those of Halesia tetraptera are often three times that length. The leaves of the variety are thicker, distinctly rugose, pale, and on young vigorous plants often conspicuously glandular-serrate.

C. S. S.

Foreign Correspondence.

London Letter.

CYCADS.—A lecture on Cycads by Mr. Carruthers, the principal botanist of the British Museum, was a special feature in the programme of the Royal Horticultural Society last Tuesday, the other attractions being a competitive exhibition of fruits and collections of new and interesting plants. Although Mr. Carruthers talked exclusively of the botanical features of his subject, he said a great deal which would interest the cultivator. The position of Cycadaceæ in the botanical system is generally supposed to be close to Palms, but, as a matter of fact, they are very nearly related to the Coniferæ, a relationship which their floral organs conclusively shows, the cones of Cycads being very similar to those of conifers structurally as well as superficially. In all other respects, however, the Cycads differ very widely from the conifers, their thick, rarely branched trunks bearing broad crowns of pinnate, sometimes spinous leaves, which are folded involutely, when young, like the leaves of a Fern, and the habit of producing their cones in the centre of the crown of leaves marking them out distinctly not only from conifers but from all other natural orders. There are some anomalous genera among the Cycads, for instance, the Australian Bowenia, with an irregular fleshy root-stock, from which spring elegant bipinnate leaves a yard across on stalks three or four feet high; this is a beautiful stove-plant when well grown. Stangeria paradoxa, the great Fern puzzle, has leaves exactly like those of a Lomaria, and a fleshy Turnip-like stem. It is a native of South Africa, where it was found by a German collector, and named by Kunze, Lomaria eriopus. But the eminent pteridologist, J. Smith, curator at Kew, doubted its being a Fern, and about forty years ago a plant at Kew flowering, it was figured under its present name in the *Botanical Magazine*, t. 5121.

The geographical distribution of the Cycadaceæ is remarkable. They are most abundant in Africa, and they occur in many parts of India, the Malay regions, Australia, Central America, Florida, the West Indies, China and Japan. The tallest are the Cycases, stems of which have been seen forty feet high, and the smallest is the little Floridan Zamia pygmæa, or integrifolia, as it is sometimes called. In the geological history of plants Cycads appear to have occupied a prominent position among the very first of the dryland vegetation—that is, of the Devonian or Mesozoic Age. They then appear to have been world-

wide in their distribution, representatives of them having been found as far north as Greenland. They are said to be the remains of an otherwise extinct vegetation, and, as Dr. Masters remarked in the discussion, the existence of living representatives of Cycadaceæ is quite as startling a fact in botany as living examples of Ichthyosaurus and Megatherium would be in zoölogy. Cycas is found in the East Indies and Madagascar, Encephalartos and Stangeria in Africa, Bowenia and Macrozamia in Australia, Zamia, Ceratozamia, Dioon and Microcycas in America and the West Indies. Mr. Carruthers stated that Bowenia in Australia and Stangeria in Africa are totally unlike any other vegetable forms among which they grow; there is no plant known either in botany or geology which links them with the chain of vegetation as at present known. He asked the pertinent question, "Are these two plants the remains of an otherwise extinct race, or are they newly evolved?" The exceptional interest of Cycads is not the only claim they possess to the notice of horticulturists. I have lately drawn the attention of the readers of GARDEN AND FOREST to the merits of some of the Cycads as garden-plants. They are more in favor in Belgium, France and Russia than in England. I know no more noble plants either at Kew or elsewhere than the grand specimens of Encephalartos, Cycas, Macrozamia, Dioon and Ceratozamia, which are to be seen in the few gardens where Cycads are in favor. A remarkable character in Cycads is that of exceptional vitality in their stems. The plants may be cut down and their heads put in as cuttings with safety, and although they do not branch, as a rule, yet if they lose their central bud they will sometimes develop one or several buds lower down the stem. I have seen a Cycas stem, the top of which rotted, afterward produce three lateral buds, which finally developed and grew into three separate plants. Imported stems have been known to remain quite dormant for more than three years, and then push into vigorous growth and flourish.

Fig. 91.—Halesia tetraptera Meehani.—See page 534.

NEW VARIETIES OF CORDYLINE AUSTRALIS.—This is one of the most variable of New Zealand plants, and there are many forms of it already in cultivation here. Mr. Elliott,

of Christchurch, Hampshire, recently exhibited some new varieties which promise to eclipse most of the older kinds as decorative plants. Among them are Aureo-striata, narrow and rather short in leaf, with lines of deep yellow on a green ground, and more or less spirally twisted; Nobilis has distinct parallel lines of brown not unlike the older lineata, but the leaves are shorter and broader; Compacta nana accords with its name, and is a pretty little plant, likely to become a favorite for table decoration; Elegans has linear arching leaves, and Lusiformis is another elegant variety; Rubra has rich bronzy brown foliage and is a handsome plant. It was awarded a first-class certificate by the Royal Horticultural Society. We believe these are all selections from seedlings raised in New Zealand.

New Chrysanthemums.—There were four Chrysanthemums selected for certificates from the large number of new seedlings shown this week: Mrs. C. Myers (Owen), a broad-petaled, large-flowered, white Japanese; Baron Hirsch (Owen), a reddish bronze flower with golden reverse, of the incurved section, with broad substantial petals. It is a large and promising variety for the exhibition-table; William Seward (Seward), a Japanese variety, with the color of Cullingfordii—that is, brownish crimson, with buff reverse. The flower is large and of good form. It was generally voted to be one of the best of the newer seedlings. Beauty of Exmouth (Godfrey), a beautiful white Japanese variety, said to be the result of a cross between Avalanche and Stanstead Surprise. The flowers are very large, globular, the petals broad and curled and pure ivory-white. The plant grows about five feet high, and the flowers are developed from October to January.

New Zonal Pelargoniums.—Mr. Cannell has produced several varieties of merit this year. Among those exhibited for certificates this week were Madame Bondeville, of French origin, remarkable for the size of its flower-heads and for the very pleasing color of its flowers, soft salmon, with a distinct marginal line of rosy pink. Raspail Improved is a genuine improvement on the original; it is larger in truss and much larger in flower than the popular market variety Raspail. The flowers are rich scarlet, and some of them measure over two inches across. Double New Life is a remarkable sport of the third generation from Vesuvius, obtained twenty-five years ago. Out of Vesuvius came Wonderful, which yielded New Life, a single-flowered variety with white flakes or stripes on the petals. From this has sprung Double New Life. It is only semi-double, but its looseness and the white flakes on the petals make it attractive. These received certificates.

Melon Beauty of Syon is a new seedling which received a first-class certificate this week from the Royal Horticultural Society. The gardener at Syon, Mr. G. Wythes, has taken special interest in the culture and improvement of the Melon, and he is to be congratulated on having raised one which promises to become a general favorite. It was raised from Hero of Lockinge and another, and has round, medium-sized, yellow-netted fruit, smooth, with scarlet flesh, melting, juicy and of first-rate flavor. The members of the Fruit Committee were unanimous in its praise. It will, no doubt, be better earlier in the season than in the middle of October.

London. *W. Watson.*

Cultural Department.

Plants for Summer Decoration.

MUCH has been said against the practice of bedding out, but, after all, when the proper plants are used we can secure effects in this way which are not obtainable in any other, and as stock-plants are now in their winter quarters or protected and made secure, it is worth while to name some of the plants which have proved most useful during the past year, so that they can be propagated during the winter in sufficient numbers for our purposes next season. It is well to secure a considerable variety, if only to break the monotony, of the too prevalent Coleus and Geraniums.

Among the species most worthy of cultivation is Acalypha tricolor, a plant of strong growth with ovate-acuminate leaves, coppery green and beautifully blotched and colored with red and crimson. Our hot summers suit it admirably, and it should be planted in the very warmest spot possible, and in the full sunshine. It is easily propagated by cuttings, but where the stock is limited the old plants must be preserved for use. It does not lift well, and a little extra attention in this particular will be well repaid. It is a stove-plant, and, therefore, must not be subjected to a low temperature when taken from the ground. The young succulent growth of the tips of the branches will answer for cuttings, and large plants, cut back root and branch, and laid on a bench where there is gentle bottom-heat will soon break, and as fresh growth and roots are made the plants should be potted and kept in a warm house, and abundant cuttings will be afforded during the early season of the year.

Another useful plant is the variegated form of Sanchezia nobilis. It is large, with leaves of intense green, their midribs and veins heavily margined with gold and yellow, so that the entire plants can well vie with the popular Croton when used in summer decoration. It grows more freely, however, and is more easily propagated than Crotons, and stock can be raised in a short time. Crotons themselves have formed such striking features in the public parks of late that their use in private grounds is sure to become extensive. In diversity of color and form of foliage they are most attractive. They, too, delight in full sunshine and rich soil, and copious supplies of water during hot weather. Large plants are most effective, but they require time to attain size. Smaller specimens will be satisfactory, but instead of crowding them it is better to use some dwarf plants to cover the surface of the bed, so that the individual beauty of the Crotons can have full opportunity to display itself.

Very graceful and charming for summer use is Phyllanthus Roseo-pictus. The variegation is exceedingly rich, no two leaves showing precisely the same markings or tints. Many of the leaves are bright crimson, which is also the color of the stem during the early stages of its growth. Some are a light cream color tinted with a delicate blush. Others, again, have a dark bronzy hue shaded with crimson, while some are dark green with blotches and spots of rose. Others are tricolored, being white with different shades of rose and green. A plant six or eight feet high and furnished to the ground, is a magnificent sight. Smaller plants can be used as centres of beds with an undergrowth of Altenanthera aurea, which makes a pleasing combination. When planted out, small plants grow rapidly. They are multiplied by cuttings from the shoots and roots, the latter being preferable.

Grevillea robusta makes a beautiful specimen plant on account of its Fern-like foliage. In a group also it is well placed in the centre of a bed. Plants raised from seed early in spring will usually be large enough to plant out the same year, but fall-sown seedlings are preferable for specimens. Older and larger plants are very ornamental where space can be afforded for wintering them, but as they grow rapidly and attain a height of from eight to ten feet the second year, it is not necessary to winter very large plants. The same is true of Eucalyptus globulus, which is most effective either as a specimen or in a clump, since its glaucous blue foliage is very striking among deeper hues.

Musa Ensete and M. Martini are both desirable the first year from seed which is sown early in spring. Their foliage is short and sturdy, and is not so liable to get broken by heavy storms as is that of older plants. The best plants I have seen grown were set in heavy soil. Papyrus Antiquorum, whether treated as an aquatic or as a border plant, makes magnificent groups, its tufted blooms rising to a height of eight feet. It delights in a rich moist soil, and endures the weather better in a bed or border than when submerged in water. Planted in a mass with a border of Caladium giganteum the effect of the light and dark foliage is very striking. Seeds sown very early in the season and kept on growing will produce seedlings suitable for planting out the same year.

Very desirable, although too rarely seen, is Cassia corymbosa. Its beautiful yellow flowers are produced in abundance all the season until frost. As soon as the foliage dies it can be pruned back severely, when plants may be lifted and kept in a cold place through the winter. It can be easily raised from seed, however, although it does not flower, as a rule, until the second season. The Coral Tree (Erythrina) is a useful companion to the Cassia, and succeeds well under the same treatment. E. Hendersoni, which bears abundant bright scarlet flowers, is readily raised from seed, and one of the very best.

The Rubber Tree, Ficus elastica, and its variegated form, must not be omitted from this list of plants for summer deco-

ration on account of its dark green glossy foliage and bright crimson sheaths, which are much brighter than when grown within doors. It endures the weather well and can be lifted without injury. Now is a good time for propagating it. The main shoots should be girdled so as to check the flow of sap and form a callus. If moss is tied around and kept moist, roots will put forth, and with a little attention a good plant will be formed before it is severed from the stock-plant. Shoots may also be taken off, and leaves with eyes that are started, placed in a propagating-frame with bottom heat, will make plants for next season.

New Zealand Flax (Phormium tenax) and its variegated variety are very serviceable in exposed places. Their long sword-like leaves are quite distinct when associated with other sub-tropical plants, and are never beaten or broken by heavy storms or high winds. This is also a useful plant for the greenhouse or living-room. Solanums and Wigandias are rapid-growing and ornamental, but they need to be set in a sheltered place or they are soon damaged, since their growth is succulent. No decorative plant has made more marked improvement than the Cannas. The variety, Madame Crozy, with its dazzling brilliancy, is almost painful in a mass, but where planted in small quantities and relieved by the bronzy green foliage of other varieties, it is magnificent. A single plant in a mixed border is also very effective, and so are specimens in greenhouses or conservatories. It flowers perpetually, and can be had in bloom the whole year round. Other equally good and distinct varieties have made their appearance this season and promise to be valuable. Among them I should select Alphonse Bouvier, a strong-growing sort, three and a half feet high, with deep green foliage and tall spikes of rich scarlet-vermilion flowers, which are very large and distinct. J. D. Cabos is another striking novelty, which grows strongly to the height of four feet and has rich purplish foliage. Its flowers are large and round, of a rich apricot color, with deeper shadings. Cannas are readily raised from seed, which will flower the first season, and a large percentage of good flowers are produced from the seed of Madame Crozy.

Cordyline indivisa makes a very graceful and serviceable specimen, and, when small, is an admirable centre for a vase. Its leaves are long, tapering, light green, and not readily broken by high winds even in exposed positions. Plants are quickly procured from seed, and soon grow to specimen size, as they make rapid growth when planted out during the summer. They can be easily lifted, too, and kept in the greenhouse during the winter. They do not need pots in proportion to their size, as many other plants do. When lifting most plants in fall it is desirable to put them into as small pots or tubs as will conveniently contain the roots without bruising them. The preservation of a good ball of roots, however, is necessary for all those that are annually planted out and lifted.

Dongan Hills, N. Y. *Wm. Tricker.*

Foliage-plants.

IN the case of warm-house plants at this season more attention is needed to secure the proper conditions of temperature and moisture than during the summer; as the days shorten the growth of such plants will be slower, and they are thus less able to withstand extremes of treatment. Comparatively little potting will be needed among this class of plants during the next two or three months, except it may be in the case of some small specimens that would be likely to suffer before the time of the general repotting in the spring. Even in such instances it is advisable to give only a small shift, for overpotting is doubly dangerous to tender-rooted subjects during the early part of the winter. Watering and syringing should be done early in the day, for too much moisture on the foliage will soon injure it, though when strong heat is applied after the nights become colder, it is a good practice to damp down the walks and under the benches in the afternoon, to prevent the atmosphere from becoming too dry.

The attacks of insects must be watched for with strict attention also during the winter months, for with the partial cessation of syringing such pests as red spiders and thrips are very likely to appear on Dracænas, Cordylines, Crotons and Dieffenbachias, and, if unchecked, will soon ruin the foliage. Tobacco-water is the most effective remedy for these troubles, and in a conservatory is less objectionable than fumigating, besides being more effective, with red spiders at least. If this pest becomes plentiful on any particular plant, it may be removed by giving a dip in tobacco-water to which has been added some sulphur, the strength of the wash being proportioned to the kind of plant, for the tobacco-water will injure tender foliage when used too strong.

Several of the prepared insecticides are also useful preparations for this purpose, especially for small establishments where the limited quantity of such mixtures required makes their cost appear less formidable. But if any considerable quantity of insecticide is needed it is more economical to use the home-made remedies, and among these the tobacco-water and solution of whale-oil soap are among the most satisfactory. For some extreme cases the kerosene emulsion is very effective, but this must always be used with judgment, or the result will be disastrous.

The propagation of various foliage-plants can be carried on during the winter, provided sufficient heat can be had for the purpose. Among these Crotons and Ficus may be included, the first-named rooting readily at any time in a warm house. With generous treatment there will be nice-sized plants for bedding out in June. There is also little difficulty in rooting Ficus cuttings, especially about January. The safest method is that of topping, by means of an incision in a shoot, some three or four leaves from the tip, and binding some damp moss around the cut. Under favorable conditions these tops will send out roots in two or three weeks, and can then be removed from the parent plant and potted. Such cuttings naturally make more shapely plants than those struck from a single eye, and the tops can be rooted at any season of the year without difficulty.

Some of the slender Aralias, like A. Veitchii, A. elegantissima, and A. leptophylla, can also be worked during the winter and spring, using for a stock either A. reticulata or A. Guilfoylei, as the first-named species are very slow rooting from cuttings, and will grow away more freely when grafted. The stocks for this purpose may be supplied either from root or top cuttings, cleft grafting, if neatly done, being the most satisfactory method for this operation.

The tops of Cordylines and Dracænas may also be rooted in the manner recommended for Ficus, making by far the finest specimens, as they have large leaves, extending to the pot, if properly grown, beside showing more color than those that have been potted on from small plants.

Holmesburg, Pa. *W. H. Taplin.*

Wintering Strawberry-beds.

THE proper care of Strawberry-plants during the cold weather is an important item in the cultivation of this fruit. They may live through a very low temperature, and yet suffer seriously in vigor and usefulness; a smaller, inferior and later crop is sure to follow needless exposure. The extent of this damage depends, of course, on the severity of the winter and the degree of exposure. In the northern states a temperature not much below the average is liable to make a clean sweep by killing the plants outright. Even in this latitude, and in ordinary winters, I find the loss to average one-fourth, and wherever the thermometer is liable to drop ten degrees below freezing winter protection will pay well. Numerous substances may be used to protect the plants; some better than others; almost any better than none. At the south we never think of anything but pine-needles, or pine-straw, as we call it. Not only does the resinous nature of the pine-straw tend to repel insects which might possibly take refuge under the covering in winter, but it is an excellent non-conductor. It is also, from mechanical reasons, an ideal protector. Its shape and size render it easy to apply evenly and rapidly. The needles are so small that even the hardest wind is apt to pass through the mass without any serious displacement, while the same openness allows the passage of sufficient air to prevent smothering even where the cover is deeper than it should be. I have had plants to survive an accidental covering of three feet, and that, too, where the pile of straw lay for four months. I need hardly say that such a deep covering would be neither practicable nor safe, one inch of this kind of covering being sufficient even in a cold climate.

Pine-straw not to be had, my next choice should be cornstalks, laid uncut and evenly over the bed in the direction the rows run. As they lie much more open than straw, a depth of one foot would be about right. Where neither of the above are procurable, recourse is generally had to hay or wheat or oat straw. The main objection to these is that they are all easily blown off. Some seek to prevent this by chopping it very short, which, according to my experience, is no remedy at all. The separate particles are still so much larger in proportion to their weight than pine-needles that they are apt to take wings on gusty days. I should much prefer to apply the straw whole, and anchor it by means of poles or some such weights laid on top. Even earth might be used to hold the straw, provided a little care was taken in its application and removal. It need not be either deep or continuous, but

only in small piles as far apart as the length of the straw will admit.

Coarse stable-manure possesses a natural warmth beyond other substances, besides being an excellent fertilizer. Yet it is more apt to smother plants than either of the others, if carelessly applied. But even when very fine, a uniform application half an inch deep would be safe, and can be left on as a mulch through bearing time, the weeds being kept down by hand. When an inch of pine-needles or grain-straw was used, quite two-thirds should be removed from over the plants in early spring and left between the rows. Should the alleys between the rows be too narrow the surplus straw must be taken off the bed and piled elsewhere.

Ordinary forest-leaves are often successfully used, weighted down like grain-straw. Even chips or sawdust are better than nothing, provided they are not suffered to accumulate on the bed to the detriment of the soil. In a moderate climate, say where the mercury keeps above ten degrees, Fahrenheit, evergreen bushes or boughs would be equal, or possibly superior, to pine-straw.

In short, there are so many things available for this purpose that no gardener, unless he is wofully lacking in energy and ingenuity, need fail to find some of them. Anything that protects without smothering will answer. A safe rule is to apply nothing too deep to prevent a slight freezing of the ground in severest weather. The proper time to apply is as soon as the ground freezes an inch deep. Rake off the surplus before it is time for the plants to start into growth. Here I find that from December 1st to March 10th to be the best average dates to cover and uncover, respectively.

There is another very good use to which this straw, etc., may be put. As it lies between the rows after being drawn off the plants in spring, it can easily and quickly be drawn back on them to save the blooms from frost. In case of protracted cold, it can safely be allowed to remain for three or four days without damage to the plants. Its removal is also a small matter. Even where cold snaps should occur repeatedly the raking on and off the straw would consume only a few minutes each time, and be many times repaid by a crop of fine early berries, which would otherwise be destroyed.

Kittrell, N. C. *O. W. Blacknall.*

Correspondence.

Forests in California.

To the Editor of Garden and Forest:

Sir,—The subject of the preservation of Californian forests is seldom discussed without some reference being made to the injury wrought by roving bands of sheep, and by the fires which follow in their wake. Throughout the high Sierra sheep are pastured only in summer, and find winter feed in the foot-hills and valleys. In the high mountains the land belongs to the Government for the most part, and the sheep are nomadic. Young trees are killed by browsing, while, by accident or design, fires start which sweep over vast areas, killing the young conifers and much large timber as well.

I only allude to the connection between sheep and forestry in the Sierras to emphasize a curious paradox in another section. Lying from the sea-coast back for fifty to one hundred miles, and reaching in California from San Bernardino on the south to the Oregon boundary and continuing through Oregon and Washington, the Coast-range is a vast mountain system enclosing numerous valleys. In northern California a belt of coniferous trees, mostly Redwood, lies next to the sea-coast, and in Oregon and Washington the Coast-range is covered with Spruce and Fir. Outside of the Redwood region and the groves of Yellow Pine, of comparatively small area, the Coast-range in California is a region of Oaks and other deciduous trees, with large tracts of grassy slopes, and equally large areas of low, dense brush, locally called Chemisal and Chapparal.

This whole mountainous section is devoted to sheep. The land, or enough to control it, is owned by the sheep-owners in tracts large enough to carry flocks of from 1,000 to 20,000 head, which range over the same country throughout the year. Now, it is a matter of common remark throughout this section that the brush is encroaching rapidly upon the open slopes or grazing-land. That it should be so seems strange, flatly contradicting, as it does, our preconceived ideas of what the effect should be. It would seem that in the ages past the timber would have covered all suitable areas. To understand why we have this result we must study conditions. Before the white occupation all of these open slopes were covered in summer with a luxuriant growth of grass. Wild Oats grew waist-high, and other grasses in proportion. Fires were started by natural causes, or by the Indians, who fired the grass to drive game from cover or to open up the brush for future hunting; and these periodical burnings had such a great heat as to kill trees or shrubs of most sorts in the grass-lands and to keep down the hardiest sorts.

When these mountains became private property and sheep were run on them, the luxuriant growth was kept down. Many natural grasses are killed out and replaced by foreign grasses. I have seen the entire range of grass change twice. Sheep-trails and grass eaten to the ground stop the spread of fires, and then, too, there is not such a mass of tinder to make so intense a heat. Grass is the sheepman's capital, and he carefully guards against brush or grass fires. The sheep can by browsing do little injury to the Oaks, and will scarcely touch the Laurel, Manzanita or Madroña.

As a result, we not only find the brush and woodland encroaching on the pasture, but the dense thickets of brush are becoming woodland by shading out the weaker growth.

Ukiah, Cal. *Carl Purdy.*

Late Flowering of Jackman's Clematis.

To the Editor of Garden and Forest:

Sir,—Passing along a street in Marblehead, Massachusetts, I was suprised to see this morning (October 29th) a splendid specimen plant of Clematis Jackmani that had been trained above the second story of a house, and which presented a mass of most gorgeous bloom on all its terminal shoots. Without doubt, there were from twenty-five to thirty perfect flowers, and of more than ordinary size individually. That this gorgeous effect would be possible at this date would ordinarily seem quite incredible, but is illustrative of the unusually late autumn which we are experiencing.

Reading, Mass. *J. Woodward Manning.*

Periodical Literature.

Citing as its authority Mr. C. W. Hayes, who not long ago explored the Yukon District of Alaska, the *Popular Science Monthly* for November says that in the interior plateau of the Cordilleran and St. Elias regions "surface degradation is greatly retarded by the luxuriant growth of moss, which covers practically the entire surface of the country. The annual precipitation is largely confined to the winter months, and the water from the melting snow is held by the sponge-like moss, which remains saturated throughout the short but hot and dry summer. Thus, with a rainfall which in lower latitudes would condition an arid region, a large part of the surface is swampy, quite irrespective of slope—that is, wherever the material composing it is sufficiently compact to become impervious to water on freezing. On account of this slow and imperfect surface drainage, the slopes are not cut into the ravines and arroyas so characteristic of arid regions."

Last year Mr. Frederick Le Roy Sargent published a note in the *Bulletin of the Torrey Botanical Club* with regard to a Linden which did its best to profit by an injury to its trunk by throwing out adventitious roots to feed upon the decaying wood within. This has called forth accounts of similar instances of abnormal growth from several other observers, and Mr. Sargent now publishes them in the *Popular Science Monthly* for November in an article called "Economical Trees," in which the foregoing and a number of new examples are brought together in an interesting comparison. Several good illustrations accompany the paper, the most remarkable of them showing the trunk of an old Mulberry which stands at Thomasville, Georgia. Of this Mulberry, its owner, Dr. T. S. Hopkins, writes: "I have had an intimate acquaintance with this old tree for thirty years. I do not know how old it was when I first knew it. Some fifteen years ago it was uprooted by a storm. I carefully amputated its limbs and re-erected its body. It lived and improved, and to-day furnishes as much shade as it did before its fall, and the surgical operation made necessary by it." Mr. Sargent adds that "in point of size, extent of decay and the number and thickness of its adventitious roots, it would seem to be much the most striking example of an economical tree thus far described. The trunk is now about three feet or more in diameter, and so much decayed as to leave merely a shell of no great thickness. The adventitious roots are some of them as thick as a man's arm. They all ramify through the disintegrating heart of the tree, and the longest of them appear to reach the earth. Besides saving from waste the products of decay, these roots must add considerable strength to the weakened trunk. This feature is,

perhaps, all the more significant in view of the Mulberry's near kinship with the Banyan-tree, which makes such wonderful mechanical use of aerial roots." The picture shows some of the roots of the Mulberry crossing the huge cavity in the trunk like mammoth harp-strings.

Exhibitions.

The New York Chrysanthemum Show.

THE great amphitheatre of the Madison Square Garden is a place of surprising changes, and there is no change during the year more cordially welcomed than that which converts it into a maze of Chrysanthemum blossoms. Under the auspices of the New York Florists' Club, the Madison Square Garden Company opened the usual fall exhibition on November 1st, with a schedule of prizes valued at nearly seven thousand dollars, an amount which should have brought on an interstate competition, which would be sure to prove interesting. There was no lack of material, however, though the competition was mostly confined to local growers. The broad oval was filled with masses of flowers. As one entered the Garden and passed a great mound of decorative plants, contributed by Messrs. Siebrecht & Wadley, the foreground was seen to be filled with trained plants, beyond which, surrounding a fountain with a large basin, were covered tables, on which were displayed the cut flowers for competition. The borders of the oval were banked with great numbers of plants in small pots grown to single stems, which seem so popular among the growers. Beyond the tables a mass of Palms marked a floral booth in white, which was in striking contrast to the gay central booth of last year. The large vases of flowers, which were the striking feature of the last show, were duplicated here in great numbers, and even more bold effects were seen with enormous bowl-shaped vases, each containing twenty-five or fifty blooms. We doubt if any nobler display of the Chrysanthemum at its best has ever been made at any exhibition.

A half-dozen large Chrysanthemum-flowers in a tall vase of suitable size is such a satisfactory object that every one does not realize that a single bouncing bloom is a difficult subject to dispose of satisfactorily, owing largely to the fact that the flower has no surplus foliage as a foil. A board of Chrysanthemums is not an æsthetic object, but has certain advantages from an exhibitor's point of view. But, as the flowers have grown in size, it has been felt that an effort should be made to show them more informally and in ways which would make them more attractive, if possible, to the great flower-loving public.

The New York Florists' Club is a progressive body and deserves great credit for its bold departure in devoting a large share of the prize money to exhibits of cut flowers shown with long stems and arranged in uniform vases as supplied by the management. These vases, moulded in a handsome pattern of clear glass, were about two inches in diameter, with ample bases, and a foot high. Taking the flowers as units, the arrangement is of great merit, but such vases need space for effectiveness, and it will be necessary to devise some arrangement of the various collections of twelve, twenty-four and forty-eight, and to show the individual vases and flowers. Some simple device, like a table of medium height with terraces or steps, would possibly add very much to the individual and general effect, especially if the different collections were separated by a few small foliage-plants. The specimens were to be seen in tens of thousands, and, on the average, distinctly superior to those shown last season. Not only was the average of the flowers better as to finish and size, but they were notably, with few exceptions, of firmer substance and remained in good condition longer than before. The competition was keen in cut flowers, and all the classes were well filled.

The cup offered by the GARDEN AND FOREST Publishing Company for the best vase containing six blooms of one variety was awarded to Peter Henderson & Co. for a vase of the Golden Wedding, a variety of Japanese origin, which is the sensation of the season. The flowers are of the very largest size, yet not coarse; the form is perfect, the petals gracefully incurving somewhat irregularly. The color is a clear golden yellow. A mammoth vase furnished with fifty flowers of this noteworthy variety also gained the silver cup offered by Mrs. W. Bayard Cutting. The John Eyerman silver cup, for the best six blooms of pink, was awarded to J. Simpkins for a vase of Mermaid. The silver cup of Peter Henderson & Co., for a vase of twenty-five yellow flowers, was awarded to J. Brydon, of Yarmouthport, Massachusetts, for a fine mass of W. H. Lincoln. The Dailledouze Brothers' prize for the best six blooms of any variety introduced in the spring of 1892 was taken by Julius Roehrs, for fine blooms of Maria Simpson, a flower in the way of Eldorado. The principal prizes for classes of cut blooms were taken by Ernest Asmus, Dailledouze Brothers, Pitcher & Manda and Julius Roehrs.

An interesting exhibit was brought out in the competition for the best twelve vases with six flowers of one variety in each vase. The group which took the prize contained Miss A. Swann, Harry May, Roslyn, Minnie Wannamaker, H. Cannell, Lilian B. Bird, Eda Prass, Colonel W. B. Spaulding, Kioto, H. E. Widener, J. H. White, Ada Spaulding, and the plants were shown by F. T. Underhill, Oyster Bay, Long Island. The prize for the best twenty-four Japanese varieties, shown on boards, was awarded to Ernest Asmus with the varieties Edward Hatch, Dr. Callendreau, H. E. Widener, Miss Bertha Robinson, W. H. Lincoln, Exquisite, Mrs. E. D. Adams, Mrs. J. Thomas, Viviand Morel, Ivory, Volcano, Mrs. Governor Fifer, Mrs. Irving Clarke, Golden Gate, Domination, Mermaid, Jessica, Waban, Cochinella, Edward Hitzeroth, Mrs. J. N. Gerard, Ed. Molyneaux, Minnie Wannamaker, Hicks Arnold.

A vase given by J. H. Taylor was awarded to Dailledouze Brothers for the best flower in the show.

Plants in trained specimens, standard plants, and plants grown to single blooms, were shown in large numbers, but were without special feature. For these the principal prizes were taken by Pitcher & Manda, Julius Roehrs, Ernest Asmus, T. H. Spaulding. A special prize, a silver cup, offered by James Dean, was awarded to T. W. Hatfield, gardener to Walter Hunnewell, Esq., of Wellesley, Massachusetts, for the best plant exhibited. This was a well-grown and flowered plant of Mrs. Alpheus Hardy.

On Thursday seedlings were exhibited in great numbers; but, although the flowers averaged unusually good, there were no striking advances or departures from well-known types, and few new varieties, indeed, which a Chrysanthemum society would care to certificate as superior in any respect to those already in cultivation. As varieties multiply it becomes more and more necessary to be cautious about scattering such honors as first prizes at a great exhibition with too lavish a hand. The first prize for the best pink seedling, for example, might mean very little if there were only two or three flowers of that color in the competition, and it means still less if the flower so decorated is not a true pink after all. Among the white varieties, W. G. Newett; among the yellows, Mrs. F. L. Ames, and among the pinks, Wm. Plumb, attracted notice. The principal prizes in this class went to F. S. Waby, Pitcher & Manda, E. G. Hill & Co., F. D. Underhill and J. N. May.

On the last days of the exhibition, the large vases and baskets in which flowers with long stems were arranged with other foliage, were striking features. These large vases, set on draped pillars or pedestals, often contained a hundred flowers, and many of them were very effective. In some, however, the mistake was made of mingling with the bold flowers Adiantums and other plants of delicate foliage. Several dining-tables were also shown dressed with Chrysanthemums and various kinds of foliage, but in almost every case the decorations were too profuse and looked burdensome.

The cut Roses were unusually good, and if one can judge by the interest manifested by the visitors, the Rose held its own with the Chrysanthemum. The comparatively new Rose, Madame Testout, was shown in admirable form by Ernest Asmus. The flower is a clear pink, which lights up beautifully, and it has an air of refinement and distinction which is quite captivating. The Kaiserin Augusta Victoria is a new white Rose with exquisite Tea fragrance, and is looked upon as a strong competitor of The Bride. Another new Rose shown was Bridesmaid, a sport from Catherine Mermet, and another still was John Burton's American Belle, a sport from American Beauty and a little lighter in color. Mrs. William C. Whitney is a seedling pink Rose, with long well-formed buds, raised by Mr. John N. May. Of the older Roses Meteor was conspicuous, its deep color being rare at this season, and this, with its long stems and good foliage, makes it very desirable. Madame Cusin was abundant, and is popular on account of its good color and keeping quality. Madame Watteville and the old Perle, still unexcelled among the yellows, were also noteworthy where all were good. The chief Rose prizes were won by F. R. Pierson, of Tarrytown; Ernest Asmus, J. H. Taylor and John N. May.

Notice of the Carnations, Cannas and other plants must be deferred, but it may be said that the flowers throughout were worthy of the exhibition, which seems to have become one of the established institutions of the city under the happy co-operation of the Florists' Club and the Madison Square Garden Company.

Notes.

In the Palace Gardens at Ely, according to the *Gardeners' Chronicle*, is a Plane Tree which measures nineteen feet around the stem at its smallest part, six feet from the ground, and from the stem to the branches, on either side, fifty feet. It is about one hundred feet high.

Among the German exhibits at the Chicago Fair will be a mediæval village, to be built on the Midway Plaisance under the auspices of the Deutsche Bank of Berlin, which will show the rural architecture, the home life of the peasants, and the household industries of the selected period.

We have received from Mrs. Dandridge leaves and fruit of the plant which she had purchased for Elæagnus longipes. It is a Japanese species, which is called in the Arnold Arboretum E. umbellata. The fruit has somewhat the flavor of E. longipes, but it is much smaller and matures much later.

Celastrus articulata, the Japanese relative of our native Bitter Sweet, C. scandens, is unusually beautiful this year, perhaps owing to the lateness of the season. Our plant has the advantage in habit, since the flowers appear at the end of the young branches, instead of being sessile in umbels at the axils of the leaves, as in C. articulata, so that the fruit is hidden by the foliage until it falls. The fruit of the native plant, too, is a trifle larger, but just now the color of the Japanese species is brighter than that of the other.

Complaints are heard from all parts of the north Atlantic states about the parching drought. In many cases the springs and wells have dried up, and it is hardly possible that the ground can be well supplied with water before freezing weather arrives. Under these circumstances it will be a trying winter for trees, and especially for evergreens. A casing of frozen earth is impervious to rain, and the water quickly runs off to the streams, leaving the earth about the roots of the trees dry all winter long. As the moisture evaporates from the leaves it cannot be supplied by the roots as it can when the ground is damp, and it is probable that many trees will therefore perish.

The American Consul-General at St. Petersburg, writing in the *North American Review* for November, says that at the Chicago Fair the Russian Ministry of Public Domains will exhibit a complete collection of the agricultural products of Russia, including all sorts of fruit, vegetables, cereals, wood, and the products of the stone and metal mills, as well as of the fisheries belonging to the Government. It is intended to make the agricultural branch of the Russian section as complete as possible, that planters and dealers in agricultural products and implements may have an opportunity to judge from personal observation of the state of Russian farming, especially as to such articles as are exported by both countries. The Department of Appanage will exhibit wines in great variety, from the immense vineyards of the Emperor, situated in the Caucasus, Crimea and Bessarabia.

The stress which is laid in France upon the proper placing of outdoor monuments is shown by the fact that before the monument to the painter Millet, recently unveiled at Cherbourg, was begun the site for it was carefully selected by Chapu, the sculptor charged with its making, aided by Bonnat, the famous painter. The selected spot is at the end of the public garden, in front of a group of ancient trees which cover it as with a dome of verdure, and the monument was evidently designed to fit such a site, as reproductions of it show that it is intended to be viewed only from the front and sides. It consists of a tall granite pedestal adorned with branches of Oak, which rise so as to form a sort of background for the base of the white marble portrait-bust which stands on the pedestal; and at the base of this last stands a peasant-woman's figure, recalling those which Millet so often painted, holding up a child, who lays a Palm-branch at the foot of the bust.

On the plains of Auvergne, the altitude of which is 300 metres, and in almost all the elevated parts of southern France and well into the Pyrenees, may be found a large species of the Composite family, Carlina acanthifolia, a hardy and very ornamental plant with pinnatifid leaves, a little hairy on the under surface, and bordered with spiny teeth, and with violet-purple flowers which are disposed in a single head. Possessing no stem, the plant lies prone on the ground, with its leaves outspread, resembles a great Artichoke, and, according to a writer in the *Bulletin d'Arboriculture et Floriculture*, of Ghent, it might be utilized for food. Indeed, Monsieur Clos, Director of the Jardin des Plantes at Toulouse, reports, on the authority of Dalechamp, that in the sixteenth century a considerable use was made of it in the province of Dauphiné, where it was considered superior to the artichoke. It was also valued for the table in the Pyrenees and the Lozère, where a hill-side near Mende was rented for 300 francs a year for its cultivation.

All persons interested in botanical science will be glad to learn that the herbarium of Wm. M. Canby, of Wilmington, Delaware, has been secured by the New York College of Pharmacy, and it will, therefore, be in good hands and will be kept together. The $6,000 which was paid for it, according to published statements, will hardly cover the actual money which has been expended upon it, to say nothing of the intelligent work which Mr. Canby has given to it during thirty-four years in traveling, collecting, corresponding and arranging. The number of species in this collection is not less than 26,000, and it may reach 30,000. The number of specimens to illustrate these species amount to 150,000. Every specimen is properly mounted and arranged in genus covers. The herbarium has already aided the studies of almost every American systematist of consequence, and specimens have often been sent to European botanists for their inspection. It has, therefore, not only already been of extended use, but has had the benefit of supervision by many eminent men.

A correspondent of the *Levant Herald* writes that a formidable danger threatens the Valonia Oaks of Asiatic Turkey in the shape of swarming caterpillars, which eat off the leaves early in the spring, and therefore destroy the fruit. For many years this pest was confined to small and isolated groves, but during the last four years it has extended its ravages until it prevails among all the Valonia-groves of the plain of Scamander and neighboring localities. The injury done to the trees is serious, and the yield of acorns is reduced in quantity and shrunken in size. A few more summers of such an infliction will bring absolute death to the forests. No organized measures for the extermination of this insect have been set on foot, and energetic proprietors who attempt to rid their trees in autumn of the eggs laid by the butterflies are handicapped by the imbecile apathy of their neighbors, who consider it impious to resist what they call a visitation of Providence, and will not stir a finger to help themselves against the pest. Of course, caterpillars which breed on these infested trees spread to the trees of the man who has been at the trouble and expense of clearing away the insects, and defoliate them also. Unless the evil is not eradicated it will seriously diminish one of the staple products of Turkish soil, and the danger is sufficiently alarming to call forth state intervention. If every proprietor were compelled under penalty of a fine to cleanse his trees by the middle of December, a work which does not seem to be very difficult, the pest might be overcome. The acorn-cups of this Oak, Quercus ægilops, contain much tannin, and thousands of tons are annually exported from Smyrna and other ports to be used for tanning, dyeing and making ink.

In an interesting article, called "Waste Products Made Useful," published in the *North American Review* for November, Lord Playfair says: "As to perfumes, there are some which are really oils, and others extracted from flowers. There are others which are made artificially, and curiously, most frequently, out of bad-smelling compounds. The fusel-oil, separated out in the distillation of spirits, has a peculiarly nasty and sickening odor. It is used, after treatment with acids and oxidizing agents, to make the oil of apples and the oil of pears. Oil of grapes and oil of cognac are little more than fusel-oil largely diluted. Oil of pineapples, on the other hand, is best made by the action of putrid cheese on sugar, or by distilling rancid butter with alcohol and oil of vitriol. This oil is largely used for making pineapple ale. Many a fair forehead used to be damped with 'Eau de Millefleurs' without knowing that its essential ingredient was got from the drainings of cow-houses, though now it can be obtained cheaper from one of the constituents of gas-tar. Out of the latter is also got oil of bitter almonds, so largely used to perfume soap and confectionery. . . . Perhaps the most important use of gas-tar is in the manufacture of alizarin, the coloring matter found in the root of the Madder-plant, so extensively used at one time in Turkey-reds and in calico printing. The discovery of its artificial preparation from the waste products of tar has destroyed a great agricultural industry which flourished in Turkey, Holland, Alsace and other countries. . . . By a very interesting series of transformations one of the constituents of coal-tar has been changed into the coloring matter of indigo. Hitherto the cost of production of artificial indigo has been too great to allow it to take the place of natural indigo, the cultivation of which is one of the staple industries of the East Indies. But its cultivators tremble lest they should find themselves in the position of the growers of Madder by a cheap artificial production of indigo-blue from coal-tar."